"AG Technology: Farming and Ranching for a Future"

"I believe in the future of agriculture with a faith born not of words but of deeds". This statement from the first line of the FFA Creed, is as true today as it was 90 years ago when it was written by E. M. Tiffany (Tiffany, 1930). Hi, my name is Erin Moncur, and today I am going to expand on how the use of technology will continue to have a huge impact on the future of agriculture.

The future of agriculture is rooted in technology. Technology has contributed to vast improvements in agriculture, especially during my lifetime. Seed technology has developed drought resistant varieties and high yielding crops, and livestock technology has changed the way ranchers breed their livestock, monitor their cattle and keep records.

The world population is growing by 80 million people every year (Beetham, 2018). Europe dealt with one of the hottest summers on record and parts of the United States have experienced wildfires in the past two years (Beetham, 2018). Agriculture needs to continue to adapt to the changing needs of the population and environment (Beetham, 2018). Biotechnology is just one way that agriculture has met this challenge! Recent developments are the ability to produce biofuels from crops and grasses (Mason, 2018). This is an important technological advancement, as the push to reduce the use of fossil fuels and provide a cleaner environment continues (Mason, 2018). Biotechnology has provided increased crop yields, improved animal and human nutrition, improved the environment and reduced waste (Mason, 2018). Technological advancements will continue to be increasingly important in order to meet the need to feed an ever-increasing population and maintain a healthy environment.

Robots in agriculture are a trend of the future. Robots and sensing technologies are another form of technology that will assist farmers and ranchers. "Smart" technology and precision agriculture are taking the agriculture industry by storm. "Smart" technology puts information literally in the hands of the producer via cellular phone. Precision agriculture collects the data in real time through sensors on equipment and satellites (Huber, 2017). "Smart" technology products allow a farmer to manage his/her crops and fields more efficiently, which equates to larger profits (Huber, 2017). Technology helps a producer monitor land and crops with the use of drones, cameras and sensors. Drones are currently one of the most notable remote robotic sensing technologies (F., 2018). Drones that are equipped with cameras have the capability to fly over fields and identify weeds or pests, which allows the producer to target damage control.

A person may think that crop farming is where technology really happens, however technology is just as important to the rancher and cattle producer. The same drones that can determine weeds and pests on crops can also be used to fly over ranch land and check cattle. Drones are especially useful in areas of rugged terrain which may only be assessable on horseback, a drone could save the rancher hours of labor (F., 2018).

DNA marker technology is a high-tech idea that uses DNA markers to test and identify the healthiest and most productive animal in the herd (Anuradha Dhar, 2016). In Scotland, "smart collars" are used on cattle. These devices are much like the exercise tracker that I have that tracks my number of steps, flights of stairs, hourly activity, and food intake, which enables me to improve my health. The "smart collar" wrapped around

the cows' neck is used to monitor cows for fertility and illness (King, 2017). The collar monitors movement and determines the optimum breeding window based on activity (King, 2017). The collar also monitors feeding time, intake, and ruminating time. This information will aid the producer in determining when a cow is sick (King, 2017). Cattle ID tags with an electronic reader can also be used to track animals and maintain breeding and performance records (Pillips, 2017).

Cameras are used extensively in calving barns around the state. My cousin uses three cameras at different angles to monitor his calving barn, this technology has saved him hundreds of trips to check cows in the middle of the night. Another developing technology is keeping calving records on a cell phone or tablet. The Calving Book App that was developed by Faulkton high school student Ellen Schlechter to use on their family farm allows multiple people to load data and also access the data (McDonald, 2015). She made the data accessible for computer, tablet, iPhone, or android devices (McDonald, 2015). This application keeps records on calves born by birth date, sex, calf tag number, cow tag number, color and weight (McDonald, 2015). It has been modified to also include breeding record, pregnancy check records, cow and sire history, as well as calf shots, treatments and culling (McDonald, 2015).

The Ag industry will continue to increase its need for technology in order to feed an ever-increasing population. Technology will continue to develop high yielding crops and drought resistant varieties, and it will continue to change the way ranchers breed their livestock, monitor their cattle and keep records. I believe in the future of agriculture, and I believe that technology will be instrumental to farming and ranching in the future!

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